

**U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY**

HEARING CHARTER

*An Overview of the Fiscal Year 2012 Research and Development Budget Proposals at the National
Oceanic and Atmospheric Administration and the Environmental Protection Agency*

**Thursday, March 10, 2010
10:00 a.m. to 12:00 p.m.
2318 Rayburn House Office Building**

PURPOSE

On Thursday, March 10, 2010 at 10:00 a.m. the House Committee on Science, Space, and Technology will hold a hearing to examine the Administration's Fiscal Year 2012 budget requests for the Environmental Protection Agency's (EPA) Science and Technology (S&T) Programs and the National Oceanic and Atmospheric Administration (NOAA).

WITNESSES

Panel I

Dr. Jane Lubchenco, Administrator, National Atmospheric and Oceanic Administration

Panel II

Dr. Paul Anastas, Assistant Administrator, Office of Research and Development (ORD), U.S. Environmental Protection Agency

BACKGROUND

OVERALL FY 2011 BUDGET REQUEST FOR NOAA

The President's FY 2012 budget request for the National Oceanic and Atmospheric Administration (NOAA) is \$5.49 billion, a 15.8 percent increase above the fiscal year (FY) 2010 levels.

NOAA's core mission and activities include weather forecasting, climate prediction, and management of fisheries, coastal and ocean resources, as well as cross-cutting research to support and advance these operational areas. NOAA carries out this mission through five major line offices:

- National Ocean Service (NOS), responsible for mapping and charting coastal areas and providing other navigation support services.
- National Weather Service (NWS), responsible for weather forecasts and warnings.
- National Environmental Satellite Service (NESS¹), responsible for development and operation of satellites that monitor and transmit data for weather forecasting, climate prediction, space weather forecasting, and earth and ocean science research.
- Office of Oceanic and Atmospheric Research (OAR), responsible for research in support of most NOAA missions including atmospheric, coastal, and oceanic sciences, climate and air quality research, ecosystem research, and fisheries and marine mammal research.

¹ The NESS line office was formerly known as the National Environmental Satellite, Data, and Information Service, NESDIS.

- National Marine Fisheries Service, responsible for stewardship of living marine resources through the conservation, management, and promotion of healthy ecosystems.

As part of the FY 2012 budget request, the Administration is proposing a major reorganization of NOAA that would include the establishment of a seventh line office. Assets from the Office of Oceanic and Atmospheric Research (OAR), the National Weather Service (NWS), and the National Environmental Satellite Service (NESS) would be transferred into a new Climate Service (CS) line office.

Table 1 shows the primary accounts or line offices of the agency's budget. The FY 2012 budget request includes increases above the FY 2010 enacted levels for Program Support, the National Environmental Satellite Service (NESS), and the Climate Service (CS). The Administration's budget proposes to decrease funding for National Ocean Service (NOS), the Office of Atmospheric and Oceanic Research (OAR), the National Weather Service (NWS) and the National Marine Fisheries Service (NMFS).

Table 1: NOAA FY 2012 Budget Request (dollars in millions)

Account	FY08 Actual	FY10 Enacted	FY11 Request	FY12 Request	FY12 Request versus FY10 Enacted	
					\$	%
National Ocean Service*	536.0	578.7	550.6	558.6	(20.1)	(3.5)
Oceanic and Atmospheric Research	398.0	449.1	464.9	212.0	(237.1)	(52.8)
National Weather Service	911.0	999.8	1003.2	988.0	(11.8)	(1.2)
National Environmental Satellite Data Information Service/NESS	955.0	1398.5	2209.0	2015.4	616.9	44.1
Climate Service	0.0	0.0	0.0	346.2	346.2	--
National Marine Fisheries Service**	829.0	1008.2	992.4	997.5	(10.7)	(1.1)
Program Support	446.0	485.9	515.1	524.8	38.9	8.0
Transfers/Rescissions		(24.8)	(50.3)	(144.8)		
Totals:	4075.0	4748.4	5554.5	5497.7	749.3	15.8

* Jurisdiction of the NOS line office is shared with the Resources Committee.

** NMFS is solely in the jurisdiction of the Resources Committee.

Climate Service (CS)

In February 2010, NOAA announced its intention to create a new Climate Service (CS) to provide public and private sector decision-makers with improved and expanded climate-related information. The FY2012 budget request formalizes this intention, requesting \$346.2 million for the CS, which would include assets consolidated from OAR, NWS, and NESS. This proposal represents the largest reorganization of NOAA since its creation in 1970. Specifically, the proposal would move more than half of OAR assets into the new CS, including the Climate Program Office, the Geophysical Fluid Dynamics Laboratory (climate modeling), and most of the Earth Systems Research Laboratory. From the NWS, CS would gain the Climate Prediction Center, the Regional U.S. Historical Climate Network, and the TAO array (monitoring). Finally, from NESS, the CS would gain the data and information centers that house the observational data from satellites, land and sea monitors.

The proposed CS was subject to a National Academy of Public Administration (NAPA) review at the behest of the FY10 Appropriations. The scope of the study included an assessment of:

- how best to provide information at the global, regional, and state levels over varying timescales;
- the interaction among the government and various users, stakeholders, researchers, and information providers of climate information in both the private and public sectors;
- the development and distribution of products and information that will support decision-making;
- the coordination and alignment of existing programs and resources internal and external to NOAA; and,
- provide estimates on projected funding levels.

Although the NAPA study endorsed the concept of a Climate Service, it was quite clear that it did not evaluate the impacts that the creation of a Climate Service would have on the rest of the NOAA research enterprise, and on OAR in particular. The Committee has not yet had the opportunity to hold hearings on the proposed climate service.

National Weather Service (NWS)

NWS provides weather, hydrologic, and climate forecasts and warnings for the United States, adjacent waters, and ocean areas, and maintains a national infrastructure of observing systems that gather and process data worldwide from the land, sea, and air.

The FY2012 request for NWS is \$988 million, a decrease of \$11.8 million, or one percent, below FY2010 levels. The Administration is requesting a \$4.7 million increase for the NWS Operations, Research and Facilities (ORF) accounts and \$16.5 million decrease for the NWS Procurement, Acquisitions and Construction (PAC) accounts. A substantial amount of the decrease is attributed to the movement of assets to the newly formed CS and the elimination of congressionally directed projects.

As part of the proposed reorganization, NWS would transfer to CS the following assets: the Climate Prediction Center (CPC), the Tropical Atmosphere Ocean (TAO) observation array, and the Historical Climate Network (HCN). The CPC produces operational predictions of climate variability from one-week forecasts to seasonal forecasts. The TAO array is a series of bouys in the Pacific Ocean that transmit oceanographic and meteorological data instrumental in NOAA's prediction of El Niño events. The HCN is a network of more than 1200 weather stations across the contiguous United States.

The Administration requested increase in the ORF accounts is within the Local Warning and Forecasts Program for: (1) National Data Buoy Center for operations and maintenance of damaged buoys, (2) Next Generation Air Transportation System (NextGen) development activities, and (3) supercomputing capabilities for more timely and accurate weather forecasts.

The requested increases in the ORF accounts are partially offset by decreases in funding. There are several programs proposed for elimination that are designated by Congress for funding and are routinely eliminated by the Administration as "Congressional earmarks." This includes the National Mesonet Network, a Congressionally mandated program to explore the use of using integrated commercial and government meteorological data to improve forecasting. NOAA maintains that it will still be able to use data collected from existing observational systems and obtain additional observational data from networks that provide data free of charge (\$19 million). Another program proposed for elimination includes the Weather Radio Improvement Project (WRIP). NOAA has completed the WRIP program, and has finished replacing weather radios (\$5.4 million).

The President's FY 2012 request proposes to continue support in the following areas: complete the acquisition of global positioning system (GPS) radiosondes (i.e. weather balloon instruments) for 102

Upper Air observing stations (\$9.0 million); support the initial operational deployment of a 4-dimensional (4-D) Weather Data Cube used for aviation weather (\$26.9 million); improve IT security for the national critical space weather system (\$11.6 million); and operation and maintenance of the Advanced Weather Interactive Processing System (AWIPS) (\$24.4 million), the Automated Surface Observing System (ASOS) (\$11.3 million), and the Next Generation Weather Radar (NEXRAD) (\$46.7 million). AWIPS is specialized software that assists forecasters in preparation of accurate, timely weather forecasts and warnings. ASOS is composed of the sensors needed to measure and record significant weather conditions. NEXRAD is the radar system that shows patterns and movement of weather conditions.

National Environmental Satellite Service (NESS)

The President's budget request for the National Environmental Satellite Service (NESS) is \$2.015 billion, a 44 percent increase over FY 2010 levels. Due to the movement of assets from NESS into the new CS, the Administration request would reduce the NESS Operations, Research and Facilities (ORF) account by \$81.3 million (41 percent) relative to FY 2010 levels, and increase the NESS Procurement, Acquisition and Construction (PAC) account by \$699 million (58 percent) over FY 2010.

NESS ORF

The ORF budget for NESS is for Environmental Satellite Observing Systems, and contains programmatic funding for management and processing of data received from all of NOAA's ground- and space-based weather monitoring equipment. The requested increases of \$5.1 million over the FY2010 appropriation would support the routine replacement and upgrading of ground based equipment and software and to increase security protocols on NESS computer systems.

NESS PAC

The budget for NESS is dominated by acquisitions for NOAA's two weather satellite systems: the Polar-Orbiting Environmental Satellites (POES), which orbit the earth and provide information for medium to long-range weather forecasts; and the geostationary satellites (GOES), which gather data above a fixed position on the earth's surface and provide information for short-range warnings and current weather conditions. To maintain the continuity of weather forecasting data as older satellites retire, a new series of satellites are under development for both systems.

Increases and decreases in the PAC account reflect different phases of satellite acquisition. For example, there is a proposed decrease of \$50.1 million from the FY2010 budget for the current series of GOES satellites, GOES-R, due to a rephrasing of program resources and continue instrument, spacecraft and ground system development for GOES R and S. Cost overruns and delays have plagued this program. Originally scheduled for launch in 2014, GOES-R has been delayed until 2015, and its projected cost has grown by \$5 billion from the original estimate of \$6.2 billion. NOAA consequently restructured the program to achieve cost reductions, and obtained independent cost estimates for the program. The Administration now estimates the cost of the new GOES series at \$7.62 billion through 2028. Cost savings were achieved by reducing the number of satellites in the series (from four to two) as well as removing one of the satellite's major sensors.

The PAC account also reflects the \$687.8 million requested increase for the Joint Polar Satellite System (JPSS). The JPSS total request of \$1.07 billion comprises most of the nearly 52% increase of the NESS line office over FY10 levels. This increase is a sizable portion of the agency's total \$750 million proposed growth in FY 2012.

JPSS evolved from a tri-agency effort to develop a satellite system known as NPOESS². NPOESS data and products are considered “mission-critical” for both civilian and military weather forecasting and climatology needs; however, the program had major problems throughout its existence. Since 2002, oversight by Congressional committees, Government Accountability Office (GAO) reports, and independent review teams have documented problems with satellite instrumentation, cooperation among the agencies involved, and the program's life-cycle cost; GAO's most recent testimony to the S&T Committee indicated that total cost estimates had grown to between \$15 billion and \$16.5 billion and were not yet stabilized.

Due to these serious management issues, schedule slips, and cost over-runs, the Administration's FY 2012 budget reflects the major restructuring of NPOESS that occurred in 2010. The decision dissolved the integrated program into two separate programs: a military program managed by the Department of Defense, and a civilian program managed by NOAA/NASA. The NOAA/NASA program known as JPSS is responsible for satellites flying in the afternoon orbits while DoD satellites are responsible for the morning orbits. The United States will rely on European satellites for operational weather observations for the remaining late-morning orbit. Satellite procurement will be separated for each program; however, both programs will deliver data to a common ground system, and NOAA will continue to operate all satellites while in orbit³.

Part of this program included a research satellite, the NPOESS Preparatory Project (NPP) that was intended to be launched during the last years of the original POES satellites in order to compare instrument functionality and usefulness and to calibrate data coming from the new instruments against the data from existing instruments. Due to the delays this program has experienced, the initial May 2006 launch of NPP has slipped to an October 2011 launch date. Instead of acting as a research tool, NPP has now been designated an operational satellite in order to ensure continuity of data, given that the first JPSS satellite is not scheduled to launch until 2016. In addition to procuring these satellite systems, the Administration is requesting \$30.4 million to restore high priority climate sensors that were de-manifested from the NPOESS program in 2006 as a result of the Nunn-McCurdy mandated restructuring of the program.

NOAA oversees several satellite systems in addition to GOES and POES. The Deep Space Climate Observatory (DSCOVR), formerly known as Triana, has a request of \$47.3 million to initiate refurbishment of the satellite and to develop a Coronal Mass Imager (CME) to maintain continuity of solar wind data used for geomagnetic storm warnings. The total life cycle of DSCOVR is projected to be \$85 million. The JASON satellite series is managed in partnership with the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT). The JASON-3 satellite FY 2011 budget request is a \$33 million increase over the FY 2010 level of \$20 million to continue the development of this altimetry satellite that will provide data for ocean climatology and hurricane intensity forecasting.

Oceanic and Atmospheric Research (OAR)

The office of Oceanic and Atmospheric Research (OAR) is the primary research arm of NOAA, conducting the scientific research, environmental studies, and technology development necessary to improve NOAA operations. OAR activities are carried out at NOAA and via extramural research activities at 30 National Sea Grant colleges and universities. The proposed formation of the Climate Service would reduce the size of OAR by more than half, to \$212 million for FY2012. The Administration proposes to reduce funding for OAR by \$237.1 million, approximately a 53 percent decrease below the FY 2010 \$549 million level.

² NOAA, the National Aeronautics and Space Administration (NASA), and the Department of Defense (DoD) collaborated to develop NPOESS. This tri-agency effort was abandoned in February 2010.

³ NOAA has been operating the Defense Meteorological Satellites for DoD since May 1998.

Notable budget changes at the remaining programs at OAR include:

- An increase of \$6 million in the Phased Array Radar and Tornado Severe Storm Research.
- An increase of \$2 million in Weather and Air Quality Research for wind boundary-layer research to support renewable energy.
- An increase of \$1 million in Sea Grant to conduct risk assessment research for coastal communities preparing for and responding to natural hazards and extreme events.
- The Administration requests \$11.6 million in funding for the Integrated Ocean Acidification Research program. This work is aimed at enhancing current knowledge to improve adaptive strategies and management of living marine resources impacted by ocean acidification.
- A decrease of \$3 million from Unmanned Aircraft Systems.
- A decrease of \$1.3 million from the U.S. Weather Research Program (reflecting the completion of some research projects).
- A \$19.5 million decrease for Congressionally Directed Programs.

National Ocean Service (NOS)

The National Ocean Service (NOS) protects the National Marine Sanctuaries and advocates coastal and ocean stewardship. The NOS also introduced electronic nautical charts which interface with Global Positioning Systems (GPS) to enhance the safety and efficiency of navigation of U.S. waterways. The President's FY 2012 request of \$558.6 million would reduce overall funding for NOS programs by \$20.5 million, or 3.5 percent, compared to the FY 2010 level.

The NOS ORF account is reduced by \$11 million. The Ocean Resources, Conservation and Assessment account has a proposed net reduction as compared to the FY 2010 enacted budget of \$7.4 million. This includes a \$8 million reduction in the Ocean Assessment Program (OAP), and an increase of \$2.9 million for Response and Restoration oil spill research. The Ocean Assessment Program includes an increase in funding for the Integrated Ocean Observing System (IOOS) Surface Current Mapping of \$5 million, an increase of \$8.5 million for IOOS Regional Observations for marine sensor technology innovations. The FY 2012 budget request includes a \$1.2 million increase for the National Centers for Coastal Ocean Science (NCCOS), and a decrease of \$1.2 million for energy licensing and appeals. The NOS-PAC accounts are also reduced by \$9 million. This includes a cut in the Marine Sanctuaries Construction (\$7.5 million) and a decrease of \$2.2 million in the acquisition and construction activities of the National Estuarine Research Reserve System.

Program Support

The Program Support line office supports corporate services and agency management. This includes the Under Secretary's office, the office of the Chief Financial Officer, the Program, Planning and Integration Office, and the NOAA Education Program. Overall, the Administration requests an increase in the Program Support account of \$6.2 million, for a total of \$301.2 million, a 2 percent increase over the FY10 level.

Overall FY 2012 Budget Request for EPA

The President’s FY 2012 budget request for the Environmental Protection Agency (EPA) is \$8.97 billion, a reduction of 12.9 percent below FY 2010 levels. The Committee on Science, Space, and Technology has jurisdiction over the Science and Technology budget listed in Table 2 below.

Table 2: EPA FY 2012 Budget Request (dollars in millions)

Account	FY08 Actual	FY10 Enacted	FY11 Request	FY12 Request	FY12 Request Versus FY10 Enacted	
					\$	%
Science and Technology	785.8	848.0	846.7	825.6	(22.4)	(2.6)
Office of Research and Development		596.7	605.7	584.1	(12.6)	(2.1)

FY 2011 Science & Technology Account: Office of Research and Development

The Administration’s budget request for S&T is \$826 million. This includes \$584 million for the Office of Research and Development (ORD), S&T activities conducted by other program offices (e.g. Office of Air, Office of Water), as well as \$27 million requested for S&T activities associated with the Superfund program. In the past, the Superfund S&T funds were drawn primarily from the Superfund trust that was funded by the dedicated Superfund tax. Since the expiration of the tax, this fund no longer exists and all funds must be appropriated from general revenues.

Approximately 71 percent of S&T funding is for EPA’s ORD, which is the primary research arm of the agency. Typically, most of the remaining S&T funds go to the Office of Air and Radiation, and a smaller amount to the Office of Water and to the other program offices.

ORD conducts and sponsors both fundamental research in environmental science and more targeted research to inform EPA’s regulatory programs. For example, ORD provides scientific information to support and implement the Clean Water Act. ORD also develops the scientific risk information for the agency’s Integrated Risk Information System (IRIS), a database of human health effects of certain chemicals. This program is used by EPA, individual states, and other government agencies to determine hazardous waste site clean-up, drinking water, and other health-based standards. ORD develops the scientific underpinning for EPA’s air quality standards in areas such as particulate matter and ozone. ORD also investigates the environmental implications of emerging areas such as nanotechnology and endocrine disruptors.

ORD carries out these responsibilities by conducting intramural research at EPA’s laboratories, awarding contracts, and supporting fellowships and research at colleges and universities through the Science to Achieve Results (STAR) grant program. The table above provides breakouts of ORD funds among the various research programs at ORD.

Within the context of a decrease in funding for EPA as a whole, the FY 2012 budget proposes funding for a range of intramural and extramural research and development activities.

- \$86 million for the STAR Program, a \$24.7 million increase over FY2010 enacted levels, to invest in the next generation of environmental scientists and to leverage wider scientific community expertise on key issues.
- \$83.1 million for clean air research and \$20.8 million for global change research.

- \$5.4 million in for research into electronic waste and green chemistry.
- \$4.4 million to study the impact of hydraulic fracturing technology on ground water quality and implications for public health and the environment.
- An increase of \$17.8 million for Chemical Safety and Sustainability Activities. A budget request of \$16.9 million for endocrine disrupting chemicals research and \$ 21.2 million for computational toxicology. Both are important for human health and ecological risk assessment.
- \$2 million for a long-term lab study

Table 3: ORD FY 2012 Budget Request (dollars in millions)

Account	Program/Project	FY10 Enacted	FY12 Request	FY12 Request vs. FY10 Enacted	
				\$	%
Science and Technology	Congressionally Mandated Projects	4.7	0.0	(4.7)	(100.0)
	Homeland Security: Preparedness, Response, and Recovery				
	Total Program	32.8	24.7	(8.2)	(25.0)
	<i>Decontamination</i>	10.0	15.6	5.6	56.0
	<i>Safe Buildings</i>	20.9	0.0	(20.9)	(100.0)
	<i>Other Research</i>	2.0	9.0	7.0	350.0
	Human Health Risk Assessment	42.9	42.4	0.5	1.2
	Research: Air, Climate, and Energy				
	Total Program	111.4	108.0	(3.4)	(3.1)
	<i>Global Change Research</i>	20.8	20.8	0.0	0.0
	<i>Clean Air Research</i>	81.6	83.1	1.5	1.8
	<i>Other Research</i>	9.0	4.1	(4.9)	(54.4)
	Research: Safe and Sustainable Water Resources				
	Total Program	111.1	118.8	7.7	6.9
	<i>Drinking Water Research</i>	49.1	52.5	3.4	6.9
	<i>Water Quality Research</i>	61.9	66.3	4.3	6.9
	Research: Sustainable and Healthy Communities				
	Total Program	188.1	170.5	(17.6)	(9.4)
	<i>Human Health Research</i>	54.2	45.4	(8.8)	16.2
	<i>Ecosystems Research</i>	71.7	60.9	(10.8)	(15.0)
<i>Other Research</i>	62.2	64.2	2.0	3.2	
Research: Chemical Safety and Sustainability					
Total Program	77.8	95.7	17.8	22.9	
<i>Endocrine Disruptors Research</i>	11.4	16.9	5.5	48.2	
<i>Computational Toxicology Research</i>	20.0	21.2	1.2	6.0	
<i>Other Research</i>	46.4	57.6	11.2	24.1	
	S&T Appropriation Total	569.0	560.0	(9.0)	(1.6)
LUST	Research: Sustainable and Healthy Communities	0.34	0.45	0.11	32.4
Inland Oil Spills	Research: Sustainable and Healthy Communities	0.64	0.61	(0.03)	(4.7)
Superfund	Homeland Security: Preparedness, Response, and Recovery	2.2	2.0	(0.2)	(9.1)
	Human Health Risk Assessment	3.4	3.3	(0.1)	(2.9)
	Research: Sustainable and Healthy Communities	21.3	17.7	(3.5)	(16.4)
	Superfund Appropriation Total	26.8	23.0	(3.8)	(14.2)
Grand Total		596.7	584.1	(12.6)	(2.1)